

### Abstract

A low-power, fully self-contained fingerprint capture, enrollment and verification method and device (100). The device includes a logic unit (110), a memory (120), a fingerprint sensor (130) and an interface (150) to an external unit (140). Included in the memory is a program (126) that includes a sensor data capture module (200), an image processing module (202), a minutia extraction module (204), a template creation module (206), a template compare module (208), and a database (210). The processes for capturing, enrolling and verifying a fingerprint are designed to be minimally computationally intensive. This allows implementation of these processes in a portable, battery-powered unit using hardware with limited memory and computing capability, or implementation in a PC with substantial performance advantages relative to known fingerprint capture, enrollment and verification processes and devices. Fingerprint verification is performed using fingerprint templates storing information as to location and type of minutia point, and direction of fingerprint ridge leading to the minutia point, rather than full image-to-image comparison.

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